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Dr. Janet Alsop Joins OMAFRA 2
Canadian Veterinarians, Take Note Too 3
American Meat Institute Animal Handling Guidelines Updated, 2007 4
Why Use Detectable Needles? 4
Understanding the Impact of Prevalence on Laboratory Test Results 5
Lyme Disease Surveillance – Tick Submissions to Public Health Laboratories 6
Toxicity of *Equisetum* to Horses 7
Control of Q Fever Infection in Sheep Flocks and Goat Herds 8
One Johne's Project Down, Second One Gearing Up! 9
Drying Times of Umbilical Cords of Dairy Calves 10
History-Taking and Feeding Neonatal Dairy Calves 11
Johne's Disease Prevention Project - Test-Positive Cows Have Production Loss in Ontario 12
Transmission of Johne's Disease from Calf to Calf under Experimental Conditions 12
Mastitis Report Card – Ontario – 2005 and 2006 13
Mycoplasma Report Card: Milk Cultures in Ontario – December 2005 to April 2007 14
Leukosis Prevention Programs – to Feed or not Feed Colostrum from Leukosis-Positive Cows 15
Leukosis Prevention – Why Do It? 16
Botulism – Handling the Milk and Meat Withdrawal Issue in the UK 17
Neospora – Where to Get the Information on Transmission 17
Standards for Organic Farming 18
Corn Silage Supplementation Before Alfalfa Grazing Prevents Bloat 18
Chronic Wasting Disease of Cervids 19
To Veterinary Practitioners Working with the Bovine Species 20
Continuing Education/Coming Events 21
CEPTOR feedback form 22

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Dr. Janet Alsop Joins OMAFRA

The Animal Health and Welfare Unit (AH&W) is pleased to welcome Dr. Janet Alsop as the newest member of the veterinary team in Fergus. She will hold the position of Veterinarian – Disease Prevention – Swine, working closely with Dr. Tim Blackwell and the other AH&W veterinarians.

Dr. Alsop spent 15 years in the swine industry in the Maritimes before graduating from the Atlantic Veterinary College in PEI in 1993. Since that time, she has practised swine medicine extensively in Ontario and the US. Janet also spent more than two years working in China as the project veterinarian for a CIDA project entitled the "China-Canada Lean Swine Project."

In 2006, Janet became board certified by the American Board of Veterinary Practitioners – Swine Health Management Specialty. She joins us from the Woodstock office of the Canadian Food Inspection Agency, where she spent the last 20 months.

Janet started her new position on Monday, May 28, 2007 and can be contacted by phone at (519) 846-3420 or e-mail at janet.alsop@ontario.ca .

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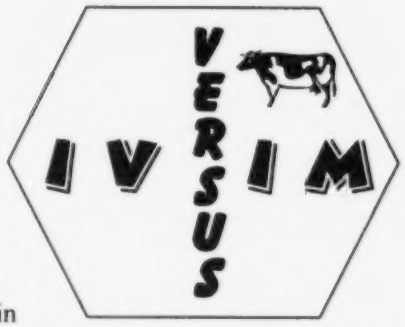
Canadian Veterinarians, Take Note Too. . .

Ann Godkin, Animal Health and Welfare, OMAFRA



FDA Reminds Veterinarians on the Correct Use of Flunixin Meglumine

The Food and Drug Administration (FDA) is reminding veterinarians about the appropriate use of the drug, flunixin meglumine, for use in cattle. FDA's Center for Veterinary Medicine (CVM) has received reports indicating that flunixin meglumine is being prescribed and/or administered by means of an intramuscular route (IM) in cattle. Flunixin meglumine's current approved route of administration is restricted to intravenous (IV) administration in cattle.

It is important for veterinarians to prescribe and use flunixin meglumine and other drugs for food animals according to directions on the label so that adulterating residues are avoided. The intramuscular administration of flunixin meglumine has the potential to cause violative drug residues, since it requires a longer withdrawal period to deplete the drug-related residue in the animal than does the approved intravenous route of administration. It is considered extra-label use to use an FDA approved product through a route of administration other than as it is approved. Extra-label use is not permitted for reasons such as convenience, yet CVM has learned that flunixin meglumine is being administered via the unapproved intramuscular route for convenience purposes.

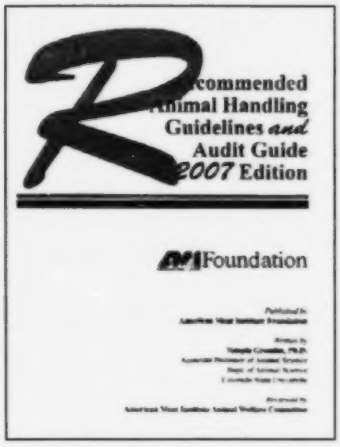
CVM has investigated a number of violative drug residues in meat that resulted from extra-label use of flunixin and wants to clarify that the *Animal Medicinal Drug Use Clarification Act* (AMDUCA) (www.fda.gov/cvm/amducatoc.htm) limits extra-label drug use to treatment when the health of an animal is threatened, or suffering or death may result from failure to treat.

Only a veterinarian can prescribe a drug in an extra-label manner. In such cases, the veterinarian must establish a substantially extended withdrawal period, supported by appropriate scientific information, prior to the marketing of milk, meat, eggs, or other edible products, to assure that violative drug residues do not occur.

The withdrawal time is the interval between the time of the last administration of a drug and the time when the animal can be safely slaughtered for food, or the milk can be safely consumed. If the labeled withdrawal period is followed, along with all other label directions, including route of administration, there is a high degree of assurance that treated animals, or milk, will be in compliance with applicable regulations, and that the edible products from such treated animals will be safe. There are established withdrawal times for approved products, such as flunixin meglumine. However, there are no approved withdrawal times for unapproved products or FDA approved products that are used in an extra-label manner.

For additional information on flunixin meglumine, please refer to:
www.fda.gov/cvm/FOI/200-124s071805.pdf and
www.fda.gov/cvm/FOI/200-308s030106.pdf

American Meat Institute Animal Handling Guidelines Updated, 2007



The 2007 Animal Handling Guidelines and Audit Guide from the American Meat Institute are now available. The guidelines, written by Temple Grandin, animal-welfare specialist at Colorado State University, are an updated version of the 2005 guidelines and have been revised based upon feedback from the field. To download the free materials please go to http://www.animalhandling.org/guidelinesauditing.htm

Why Use Detectable Needles?

Terry Grajczyk, National Manager, Quality Starts Here - Verified Beef Production (VBP)
Canadian Cattlemen's Association, (306) 737-2290

Detectable needles are more widely available and their use is supported by the beef industry's on-farm, food-safety program. The Canadian Cattlemen's Association's *Verified Beef Production* ™ program now includes a recommendation for producers to use detectable needles. Compared to standard aluminum needles, these one[illegible]re much firmer, stay sharper much longer and, as a result, are far more difficult to break.

"Research from the original Quality Starts Here program supported the development of these needles," says provincial VBP coordinator Dan Ferguson. "Among the detectable needle types now available are two types – the Ideal D3 from Neogen and the HDN from Rivard Instruments. An early detectable needle version had some problems with breaking at the hub but the new detectable needles do not have that problem. Plus the costs have come down to that comparable with other needles."

Most traditional needles are not made of a magnetic stainless steel that makes them more detectable in processed meat. These non-magnetic versions are made of austenitic 304 stainless steel and other non-magnetic metals and alloys that are not detectable.

Both types of detectable needles are now available through veterinary drug distribution centres in various sizes and lengths.

Research results from Agriculture and Agri-Food Canada's Lacombe research station showed clear results: detection rates for conventional needles at 0 to 8%, and detection rates for detectable needles – 93 to 100%. These results are highlighted for one-inch, 16-gauge needles over several types of meat cuts.

The use of detectable needles is part of the revised Producer Manual for the *Verified Beef Production* ™ program. This includes simplified standard operating procedures and recommendations geared for practicality. Check out the new manual at www.cattle.ca/qsh/qsh/Producer%20Manual/producer_manual.htm or call the provincial VBP coordinator for copies to have on hand at your clinic.

For more information:

- Rivard Instruments, www.rivardinstruments.com, (204) 837-4435 or e-mail cr@rivardinstruments.com
- Neogen, www.neogen.com/d3.htm, 1-800-525-2022 or e-mail inform@neogen.com
- Provincial VBP Coordinators:
  - Western Ontario – Ron Wooddisse, (519) 831-9429
  - Eastern Ontario – Dan Ferguson, (905) 375-8551

Understanding the Impact of Prevalence on Laboratory Test Results

Tim Blackwell, Animal Health and Welfare, OMAFRA

A test that works reliably under one set of circumstances may prove to be less dependable in a different situation. It is important for practitioners to anticipate when circumstances under which a test is applied can increase or decrease the predictive value of that test.

For example, a swine practitioner may have had good results on a Porcine Reproductive and Respiratory Syndrome (PRRS) rt-RT-PCR (Real Time Reverse Transcriptase Polymerase Chain Reaction) test for several years when using the test to identify PRRS virus in herds with clinical signs consistent with a PRRS outbreak. The practitioner may have pooled serum samples 2 to 1, 5 to 1, or even 10 to 1 and consistently identified PPRS virus in submissions from herd outbreaks. A veterinarian, primarily using the test in these situations, would be led to believe that the test is robust as well as inexpensive, since a number of serum samples could be pooled and tested simultaneously for the cost of a single test.

Based on this experience, it would seem reasonable to put the same level of confidence in the results of this test when screening a boar stud for PRRS. However, if the likelihood of a false-negative test result increases when viral concentrations are low, such confidence in the predictive value of this PRRS rt-RT PCR test for infection may be inappropriate. In an outbreak of PRRS, where sows and pigs are demonstrating severe clinical signs of infection, high concentrations of PRRS virus in the sera of clinically affected individuals will be common. No amount of pooling is likely to dilute the viral concentration below the detection limits of the test. If pooling does produce a negative result due to dilution in one sample, the impact of this false-negative test result is likely to be inconsequential. Most of the pooled sera tested will be PCR positive and the presumptive diagnosis of PRRS infection in the herd will still be confirmed.

It should also be noted that all tests have the potential of producing a low prevalence of false-positive test results as well. However, the rare false positive that occurs in samples submitted during a clinical outbreak is inconsequential. It is not inconsequential, however, when a false-positive test result occurs while screening a virus-negative boar stud.

However, if one applies the same test to a boar stud where there is no PRRS viremia, or in a boar stud where only one or two boars exist with low PRRS virus titres in their sera, the ability of the same test to confidently predict infection can change. If only one in 50 boars is experiencing an early and low PRRS viremia on the day of testing and the 50 sera collected are diluted one in two to save on testing costs, a truly infected boar could be missed. A one in 50 false-positive rate now becomes highly important. When 50 virus-negative boars are individually being screened for PRRS virus a false-positive test result can cause a major disruption in sales for that stud.

Using lab tests to identify the health status of an animal or group of animals without taking into consideration the reason for testing and the underlying population creates a greater risk of misinterpretation of test results. When the same tests are used along with other determinates of health, such as clinical signs and herd history, to arrive at a diagnosis, test interpretation is less prone to misinterpretation. Practitioners should remember that the predictive value of a test depends to a great degree on the situation in which the test is applied.

Lyme Disease Surveillance - Tick Submissions to Public Health Laboratories

Bruce McNab, Office of the Chief Veterinarian for Ontario, OMAFRA

Wildlife and entomologic studies have identified established populations of black legged ticks and small rodents infected with *Borrelia burgdorferi* along Lake Erie at Point Pelee National Park, Rondeau Provincial Park, Long Point peninsula and Turkey Point; as well as along Lake Ontario in the Prince Edward Point National Wildlife Area; and most recently, in the Thousand Islands of the Saint Lawrence River in the Saint Lawrence Islands National Park, near Gananoque. The extent of areas in Ontario with established Lyme disease is not known. Infected ticks can also be spread at lower densities throughout the province, adventitiously on birds migrating from endemic areas.

Public Health Officials report 5 to 10 Ontario-acquired cases of Lyme disease in people each year, plus 15 to 25 annual travel-related cases, that are believed to have been acquired outside Ontario. Models suggest that Lyme infected areas will increase in Ontario with anticipated climate change. Veterinarians may increasingly wish to consider Lyme disease as a potential rule-out in arthritic dogs, and caution clients and staff to avoid exposure to ticks.

Public Health Officials would like to obtain a better understanding of the frequency and distribution of ticks in Ontario carrying organisms of concern to public health, such as *B. burgdorferi*. Therefore, over the coming year (between June 2007 and May 2008), veterinarians are invited to submit ticks (in sealed plastic sample submission containers) directly to their Regional Public Health Laboratory of the Ontario Ministry of Health and Long-Term Care, with a history of where the tick was found.

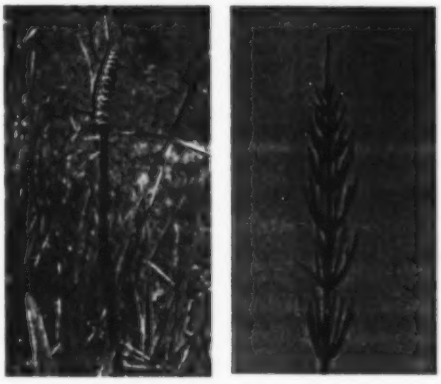
A list of Regional Public Health Laboratories may be found at: www.health.gov.on.ca/english/public/contact/phl/phlloc_dt.html. It would be greatly appreciated if submitters would fill out BOTH a Public Health Laboratory Test Requisition form (available from Regional and Central Public Health Laboratories – contact Mr. Billy Yu at Central Laboratories (416) 235-6315) AND a Parasitology Patient's History form, available online at: www.health.gov.on.ca/english/providers/pub/labs/specimen_guide/form_F-C-PA-027-001.pdf.

This testing will be done for surveillance purposes. Veterinary clinics will not be charged a laboratory fee, but testing will be given a lower priority. Reporting of positive results will usually take several weeks.

Toxicity of *Equisetum* to Horses

Andrea Bebbington, Plant Biology student, University of Guelph, and summer-2007, research student, OMAFRA, and Bob Wright, Animal Health and Welfare, OMAFRA

Equisetum species, more commonly known as horsetail, are often found on sandy and gravely wet soils, such as in marshes, wet meadows and along the banks of streams, ponds and lakes. *Equisetum arvense* is the most common species of horsetail. Typically, *E. arvense* (**Figure 1**) can be identified early in the season by its fertile stem that is about 6 inches tall. It is brown/beige in colour and has nodes that are encompassed by long, dark, clasping leaf sheaths [1]. The small, scaled cone at the top of the stem holds hundreds of thousands of spores. The green, hollow, sterile stem is usually seen in the late spring and can reach 18 inches in height with numerous, thin, needle-like branches whorled around each node [1].



Fertile stem **Sterile stem**

Figure 1. ***Equisetum arvense***

The presence of *Equisetum* in pasture is not a primary concern. However, the ingestion of contaminated hay can result in poisoning. Initial signs of *Equisetum* poisoning include a scruffy physical appearance, weight loss (without a particular loss of appetite), diarrhea and slightly uncoordinated movements. Signs progress to a loss of muscular control, staggering gaits and extreme imbalance issues. Affected horses become uneasy and nervous due to the inability to control muscle movements, may lie down and not be able to get up and may seizure. Death may result within 1 to 2 weeks [2, 3]. If caught early, the source of *Equisetum* can be removed and a full recovery can be expected. The primary toxin in the plant is thiaminase, a vitamin B_1 inhibiting enzyme [4]. An initial treatment of thiamine (vitamin B_1) solution (5 mg/kg body weight), administered intravenously every 3 hours, can produce dramatic results [5]. Treatments of 500 mg to 1 g intramuscular injections are then continued for several days to replenish vitamin B_1 levels [3].

Eradication of *Equisetum* is difficult because the plant has a rhizomatous rooting system and the ability to produce mass amounts of spores. However, there are some agricultural and chemical control methods that will help to decrease *Equisetum* populations.

For more information, refer to the Ontario Ministry of Agriculture, Food and Rural Affairs Info sheet entitled "Toxicity of *Equisetum* to Horses" at www.omafra.gov.on.ca/english/livestock/horses/facts/info-equisetum.htm .

For information on other toxic plants, refer to the Canadian Poisonous Plants Information System at www.cbif.gc.ca/pls/pp/poison .

References:

1. *Cobb, B. A Field Guide to the Ferns. Boston: Houghton Mifflin Co., 1963:194-213.*
2. *Knight AP, Walter RG. A Guide to Plant Poisoning of Animals in North America. Jackson, Wyoming: Teton NewMedia, 2001:224-225.*
3. *Burrows GE, Tylr RJ. Toxic Plants of North America. Ames, Iowa: Iowa State Press, 2001: 434-438.*
4. *Kingsbury JM. Poisonous Plants of the United States and Canada. Englewood Cliffs, New Jersey: Prentice-Hall Inc., 1964:114-118.*
5. *Radostits OM, Gay CC, Blood DC, Hinchcliff KW. Veterinary Medicine, 9th ed. Edinburgh: WB Saunders Company Ltd., 2000: 1556-1558.*

Control of Q Fever Infection in Sheep Flocks and Goat Herds

Paula Menzies, Ruminant Health Management Group,
Department of Population Medicine, Ontario Veterinary College

Again this past spring, abortion due to *Coxiella burnetii* was seen in Ontario goat herds and sheep flocks. This organism, while important as a cause of abortion and stillbirth in those species, is of particular concern because of the potential for severe disease in the humans that work with those species – including veterinarians.

Abortion and stillbirth in sheep and goats can be controlled with the use of long acting oxytetracycline (LA-TET) administered in late gestation – but there is evidence that its use will not control shedding in the vaginal secretions, feces and milk. This means that the zoonotic risk may still exist in flocks with no apparent disease, but in which infection is still present.

Most human cases of infection occur through the aerosol route. At lambing/kidding – even without abortion, a cloud of organisms may be present around the parturient animals. Producers and veterinarians assisting births may be at risk of inhaling the organism. *C. burnetii* will also easily become airborne in the dried state, so that people are at risk when cleaning the barn or when conditions are windy. Ingestion of raw milk products may also present an important risk of infection. The organism can also infect other species on the farm – cattle, cats, dogs and rodents are very susceptible to infection. While most people that come in contact with the organism do not appear to become ill – in a significant proportion, severe illness can develop with fever, headaches, respiratory disease and enlarged livers. If diagnosed promptly, treatment with the correct antibiotic is very successful. But if not diagnosed promptly or correctly, the disease may become chronic – in which case it is very difficult to cure, is debilitating and may even lead to death.

Dairy sheep and goat producers trying to control the disease in their flocks have an additional problem. Residues in the milk occasionally occur for weeks after lambing or kidding after the use of LA-TET. Use of this product in these species is extra-label and an appropriate milk withdrawal has not been established. So the producer faces a dilemma. The only tool available for control of abortion may not be suitable for use in their flock. If no control is done, the disease poses a risk to themselves and their families.

There is no approved vaccine in North America for the control of Q Fever. In Australia, there is a human vaccine used to protect abattoir workers. It is very expensive and has been associated with adverse reactions in people that are sensitized to the organism. Vaccines used in Europe for the protection of animals have traditionally not prevented shedding. Recently, a vaccine made using phase I antigens (those antigens that are expressed in the acute phase of the vaccine, rather that phase II antigens which are expressed in the chronic phase of the disease), has been used successfully in France and other European countries. Challenge trials in goats suggest that vaccinated animals shed much lower levels of organisms than unvaccinated goats. The routine use of such a vaccine may be useful in a program to reduce or eliminate the infection from the herd.

If you are working with a small ruminant herd or flock that has had problems with Q Fever and wish more information on its control, please contact me at pmenzies@ovc.uoguelph.ca or phone (519) 824-4120 ext 54043.

One Johne's Project Down, Second One Gearing Up!

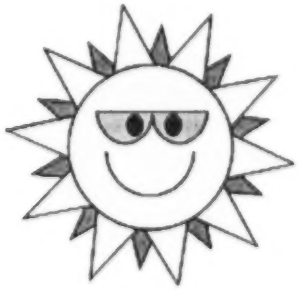
Ulrike Sorge and Dave Kelton, Department of Population Medicine, Ontario Veterinary College
Jocelyn Jansen and Ann Godkin, Animal Health and Welfare, OMAFRA

The data collection for the Johne's disease prevention project, initiated by Ann Godkin and Jocelyn Jansen, in Ontario, Alberta, Saskatchewan, Manitoba and British Columbia is almost complete. The risk assessment for Johne's disease gives the herd veterinarian the opportunity to learn more about the management procedures on his/her client herds and to promote best management practices for neonatal health beyond Johne's prevention. However, it has become clear that it is difficult to draw general conclusions about management factors that foster the spread of Johne's disease, with a single risk assessment, because the observed management procedures on-farm might differ from those in place when the milking cows were born and possibly exposed to Johne's. In other words: the long lag time of the disease is problematic and has to be acknowledged. Therefore, a follow-up study is proposed, that will follow a subset of the herds included in the original study by Drs. Godkin and Jansen.

The aim of this follow-up study is to monitor the management procedures on farms that lead to variations in the Johne's prevalence over a period of two years, streamline and improve the risk assessment questionnaire and to recognize the costs or economic benefits associated with the implementation of the control program.

The new project will consist of three parts. Part one will be a brief telephone consultation and questionnaire with the farmer, asking for the cost of management modifications as well as difficulties experienced with making recommended changes. The second part will be a significantly shortened risk assessment, which will allow the evaluation of compliance with the suggested management changes one year after the initial risk assessment. And finally, two years after the initial risk assessment, a full risk assessment as well as testing of first-lactation animals will be conducted. The two risk assessments are to be conducted by the herd veterinarian who did the initial risk assessment. Funding to support an incentive is available.

The study will be conducted by Dr. Ulrike Sorge (DVM, MSc), as her PhD project, under the supervision of Dr. David Kelton of the Ontario Veterinary College, in collaboration with CanWest DHI and Drs. Godkin and Jansen. Veterinary practitioners will be contacted shortly to solicit participation in this follow-up study. For further information regarding the project, please contact Dr. Ulrike Sorge by e-mail at usorge@uoguelph.ca.



Enjoy a Happy and safe Summer!

Drying Times of Umbilical Cords of Dairy Calves

Neil Anderson, Animal Health and Welfare, OMAFRA

The Canadian Codes of Practice for Handling Calves recommends a minimum age of 7 days for transport of calves to sales barns. Unlike some countries in the European Union, Ontario has neither a requirement for a calf *passport* nor a reliable method of age verification for calves upon arrival at a sale. Inspectors and veal-calf buyers frequently use the dryness of the umbilical cord as a surrogate measure of age. The abstract of Australian research copied below alerts us to the unreliability of this assumption.

Drying times of umbilical cords for dairy calves reared under Ontario husbandry systems during various seasons of the year are unknown. There also are no data about the frequency of calves with wet or dry umbilical cords at Ontario sale barns. Research to collect these data would be useful to our livestock industry.

Abstract:

Objective: To determine the distribution of drying times of umbilical cords of dairy calves and to determine if cord dryness is a reliable indicator of age.

Design: An observational study was undertaken in a spring calving herd in Victoria, of the umbilical cords of 188 calves (82 Friesian bulls, 82 Friesian heifers, 24 crossbreds).

Procedure: Umbilical cords were examined daily, visually and by palpation, until the cord to the junction of the skin on the abdomen of the calf was dry, shriveled and inflexible.

Results: Drying times ranged from 1 to 8 days. By the fifth day of life, the umbilical cords of 96.7% of all calves, 97.5% Friesian heifer calves, 87.5% of Friesian bull calves and 100% of cross-bred calves were dry. If cord dryness only was used to select calves for sale, 91.3% of all calves, 86.4% of Friesian bull calves and 100% of cross bred calves could have been sold before their fifth day of life. If calves were selected on age only, 3.3% of all calves, 2.5% of Friesian heifer calves and 12.5% of Friesian bull calves would have been sold before their umbilical cord was dry.

Conclusion: The dairy industry cannot rely on cord dryness alone as an indicator of age for selection of calves for sale and transportation. Cord dryness is a poor indicator of age.

Hides S, Hannah MC. Drying times of umbilical cords of dairy calves. Aust Vet J 2005;83(6):371-3.

History-Taking and Feeding Neonatal Dairy Calves

Neil Anderson, Animal Health and Welfare, OMAFRA

This report describes milk-feeding management by participants who attended winter meetings sponsored by three Eastern Ontario veterinary practices. During the meetings, instantaneous graphs of their replies were a revelation, and fodder for reflection. One practitioner said, "I had no idea so many of my clients were feeding less than 6 liters of milk. I recommend more milk than that."

Nutritional history-taking from 71 Ontario producers showed adoption of, and opportunities for, enhanced calf feeding (**Figure 1**).

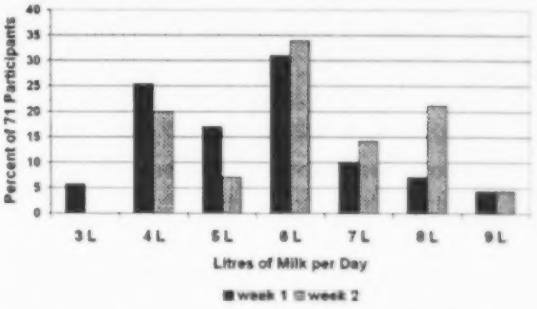


Figure 1. Proportion of participants who fed 3 to 9 litres of milk per day during weeks 1 and 2 of age.

Of the 71 producers at the meetings, 45% fed 3 to 5 litres of milk per day in the first week of age. Three to five liters of milk per day is enough for a 45-kg calf to gain 100 to 400 gm (10-40% of growth potential) in a >10°C environment. In colder environments, the calf would lose weight or gain less. One producer at the meeting said, "I was taught to feed 4 litres a day when I attended Aggie-college 30 years ago. I'm still doing it but now I see many neighbours are feeding more."

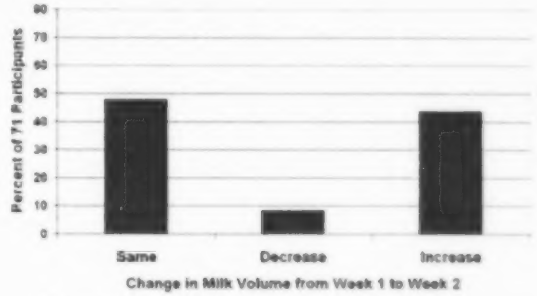


Figure 2. Proportion of participants who increased, decreased or did not change the volume of milk from week 1 to week 2 of age.

Greater than 40% of participants reported that they increased the volume of milk from week 1 to week 2 (**Figure 2**) and about 25% increased the amount fed from week 3 to weaning (**Figure 3**).

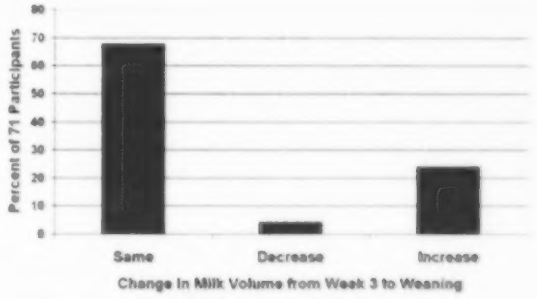


Figure 3. Proportion of participants who increased, decreased or did not change the volume of milk from week 3 to weaning.

History-taking, animal examinations and environment examinations are three pillars of a clinical examination. History-taking is important because it reveals factors predisposing to disease. The data show milk-feeding may merit an audit on some dairy farms.

Johne's Disease Prevention Project – Test-Positive Cows Have Production Loss in Ontario

Ann Godkin and Jocelyn Jansen, Animal Health and Welfare, OMAFRA, and Ulrike Sorge, Department of Population Medicine, Ontario Veterinary College

The Ontario portion of the Johne's Prevention Project involved an OMAFRA veterinarian (Jocelyn or Ann) visiting an enrolled herd with the herd's own private practitioner. Together with the herd owner, a risk assessment for Johne's Disease (JD) spread was completed during a walkabout on the farm. This information, along with the herd's production information and JD milk ELISA results from CanWest DHI, have been entered into a database. Analysis is ongoing.

The project analysis has benefited from the addition of Dr. Ulrike Sorge, a PhD candidate in the Department of Population Medicine at Ontario Veterinary College, to the project team. Dr. Sorge has worked with the database that includes the first 80 herds in the Ontario portion of the project.

In this database 57.5% of herds had at least one test-positive cow. On average 3.9% of cows per herd tested positive; 24% had more than 5% of the herd test positive. It is important to realize that this database is composed of herds that have enrolled voluntarily in this initial project because they had identified previous clinical or test-positive cows, or because their veterinarian felt they were at particular risk of having JD present in the herd.

Dr. Sorge has also found that, in Ontario, JD truly is a production-limiting problem. Of the 4,390 cows in the 80 herds tested for JD on their test-day milk samples, 148 had positive results and 23 were suspicious. When these two groups of cows were combined and their milk production on test day was compared to their own test-negative herd mates, on average these non-clinical, test-positive cows made 3.3 kg less milk (confidence interval 2.4-4.3 kg).

Of herds believed to be positive for JD, about half of them did in fact contain test-positive cows. Fortunately most of these herds have done a reasonably good job of containing the disease, as very few had a high percentage of test-positive cows. For most, there is evidence that preventing the propagation of JD, by working to eliminate the spread to young stock, is justified.

For veterinary practitioners, if you wonder if your herds should worry about JD when there are multiple factors on a farm with the potential to impact on production competing for attention, these findings will help you to prioritize how important (and costly!) Johne's might be to a producer. These production losses are valid in this population of herds (herds with suspicion of JD), and they relate to cows that test positive on the milk test. The same production loss has not been documented for fecal culture or serology in Ontario to date.

Transmission of Johne's Disease from Calf to Calf under Experimental Conditions

Ann Godkin, Animal Health and Welfare, OMAFRA

In two experiments, 20 young heifer calves were exposed to dairy cows shedding large amounts of *Mycobacterium avium* subsp *paratuberculosis* (MAP) in their feces. Subsequently, after exposure, the calves were group housed to 3 months of age, then housed individually for three years. Their infection status and their shedding of MAP were followed by culture. One month

before their expected calving date, the heifers were slaughtered and the tissues of the heifers and their unborn calves were cultured for MAP.

During the first exposure period with the cows, 5 calves excreted MAP in their feces. Four continued to do so in the group housing after the shedding cows were removed. Shedding calves infected two other calves before the 3-month period of group housing ended.

These experiments documented horizontal, calf-to-calf transmission of MAP at a young age. This suggests that calves exposed to heavy loads of MAP bacteria at a young age can carry that infection into group housing and expose other young calves, under experimental conditions.

Preventing the exposure of all calves to heavily shedding cows and exposure to MAP in the calving pen on farms may be critical, especially if calves are to be group housed.

Van Roermund HJW, Bakker D, Willemsen PTJ, de Jong MCM. Horizontal transmission of Mycobacterium avium subsp. paratuberculosis in cattle in an experimental setting: Calves can transmit the infection to other calves. Veterinary Microbiology 2007;122 (3-4, June 21):270-279.

Mastitis Report Card – Ontario – 2005 and 2006

Ann Godkin, Kathy Zurbrigg and Danielle Cardinal, Animal Health and Welfare, OMAFRA

Milk culture results from the mastitis section of the Animal Health Laboratory are summarized in the table below.

	2005		2006	
Pathogen	**# of cases**	**# of herds with 1 or more positive**	**# of cases**	**# of herds with 1 or more positive**
Staphylococcus aureus	1583	439	1575	490
Streptococcus agalactiae	61	11	54	7
Non-ag Streps	1694	584	1091	495
Prototheca sp.	61	46	85	45
Annual Totals				
# of samples	11,946		11, 423	
# of cows cultured	Approx 10,000 to 11,000 annually			
# of herds submitting at least one milk sample for culture	1181 (23% of 5203 herds in Ontario as of Jan. 1, 2005)		1217 (25% of 4934 herds in Ontario as of Jan. 1, 2006)	

These data do not provide a prevalence survey of these mastitis infections for Ontario as they come from samples submitted to the laboratory for a variety of reasons. Samples are submitted by veterinarians and herd owners as part of routine surveys, from cases of clinical mastitis and from cows with high somatic cell counts (SCCs). These samples may be quarter or composite samples. The culture results do, however, provide an indication of the frequency of the recovery of various mastitis pathogens.

For 2005 and 2006, 37% and 40% of the herds respectively that submitted samples to the laboratory in these two years had an infection with *Staph. aureus* confirmed, indicating that

pursuit of this infection is still likely a common reason for veterinarians to recommend milk culture to producers. Once identified, repeated antimicrobial therapy of these cows should be abandoned and they should be milked last or separately until high SCCs or other reasons necessitate their removal. Veterinarians should review the adequacy of post-milking teat-dipping practices in herds where *Staph. aureus* is identified. The primary purpose of post-milking teat-dipping is to prevent the further spread of this pathogen.

Strep. agalactiae remains a rare infection in Ontario. Typically, 10 or so herds are identified by milk culture each year. Eradication from these herds and from the province should be possible. Investigation of milking hygiene and the completeness of antibiotic treatment at dry-off time should be conducted in these herds.

Prototheca continues to be identified in 50 to 60 herds annually. Of the 46 herds with a Prototheca isolate in 2005, 11 had more than 1 cow culture positive. Of the 45 herds in 2006, 19 had more than one culture-positive cow during the year. This suggests that the pathogen is contagious and spreads from one cow to another, or that a common exposure for multiple cows exists on a particular farm. Survey work to identify the underlying prevalence of Prototheca as a cause of mastitis in Ontario has not been conducted to date.

Mycoplasma Report Card: Milk Cultures in Ontario – December 2005 to April 2007

Ann Godkin and Kathy Zurbrigg, Animal Health and Welfare, OMAFRA

Mycoplasma bovis is frequently reported in American lay, dairy publications as a cause of mastitis and milk quality problems.

In Ontario, Mycoplasma milk-culture results are only available from the Mycoplasma section of the Animal Health Laboratory (AHL) in Guelph. Samples are submitted when veterinarians suspect this pathogen as the underlying cause of a mastitis problem. Samples can be submitted from cows (quarter or composite samples) or from bulk tanks. Sampling patterns will vary, depending on the underlying problem being investigated.

Results from the AHL for samples submitted between December 2005 and April 2007 were tabulated. During this time period, 679 samples from cows, representing 119 farms, were submitted. Results are summarized in the table below.

Total # of samples submitted	Total positive for all mycoplasmas	Total # of cows positive for *M. bovis*	# of farms with at least 1 positive cow /# farms submitting
679 cows	22	19	6/119 (5%)

In addition to the cow samples, there were 23 samples from bulk tanks submitted. These originated from 18 farms. Of the 18 farms, 2 (11%) had one positive bulk-milk culture each. Each of these two farms also had samples from at least one individual cow that were culture positive for *Mycoplasma bovis*. Of the 18 farms submitting, at least one bulk-milk culture, 8 had cow cultures in the same time period.

From these data, it appears that clinical situations that trigger Mycoplasma submissions to the AHL are rare in Ontario. Only 119 farms, out of approximately 4,600 total dairy farms in

Ontario (about 2.6%) during this time period, had situations where their veterinarians felt Mycoplasma should be considered as a potential etiological agent for a herd or cow mastitis problem. Of these, only 6 ended up with a laboratory-confirmed infection. Bulk tank milk cultures were few, but no farms were identified solely by this method of submission.

The role of *Mycoplasma bovis* as a cause of mastitis in cows in Ontario has not been objectively evaluated based on current submission rates and culture results. Currently, as a cause of clinical mastitis or elevated SCCs, the infection appears to be of minor importance. As herds enlarge and animal movement continues to increase, this picture could change.

Leukosis Prevention Programs – to Feed or not Feed Colostrum from Leukosis-Positive Cows

Ann Godkin, Animal Health and Welfare, OMAFRA

With the advent of testing for Leukosis antibodies by CanWest DHI, using the milk ELISA on test-day milk samples, producers may have renewed interest in Leukosis infection prevention programs. One question frequently asked is whether the colostrum from test-positive (infected) cows should be fed to heifer calves.

The disadvantages of feeding colostrum from Leukosis-positive (infected) cows is that this colostrum will contain both Bovine Leukemia Virus (BLV)-infected lymphocytes and BLV antibodies. Calves that absorb BLV antibodies from maternal colostrum will frequently test positive on BLV antibody detection tests for up to 6 months. This is a disadvantage in some control programs.

The oral route for infection with BLV (via either colostrum or milk) is very minor. While virus transmission to newborn calves via colostrum is possible, research to date suggests that this is unlikely to occur if the calves are fed colostrum that also has BLV antibodies.

The advantage of feeding the colostrum from BLV-positive cows is that the maternal antibody to BLV absorbed by the calf appears to reduce the risk of infection with BLV by other routes during the early months of life. Studies have shown that calves fed colostrum without BLV antibody were 2.0 to 2.7 times more likely to be infected with BLV than calves that were fed BLV antibody, by the time they were weaned.

In herds with a high level of BLV-infection pressure, the feeding of colostrum from infected cows is likely protective. On the other hand, in herds where there are very few infected cows and infection pressure is likely very low, feeding antibody-negative colostrum might be warranted.

Leukosis Prevention – Why Do It?

Ann Godkin, Animal Health and Welfare, OMAFRA

The clinical manifestation of infection with Bovine Leukemia Virus (BLV), lymphosarcoma, is rarely seen on most farms, and as a clinical illness infrequently provides justification to producers and veterinarians for embarking on intensive control programs.

One somewhat hidden impact of BLV infection, that many are not aware of, is the number of infected cattle with subclinical disease that are condemned at slaughter for this condition (Table 1). As shown below, this loss of animals and cost to the beef industry may provide a good reason for preventing dissemination of BLV at the current time.

Table 1. Condemnations in Ontario Plants for "Neoplasm-Lymphosarcoma"

Ontario Provincial Plants	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
Calves – Male			5		1	1	3	3		1	2
Heifers	1	1	3	7	7	5	5	1	3	4	1
Cows	34	54	90	176	160	150	61	36	119	77	55
Steers	2	3	2	3	11	7	2	1	1	3	2
Total	37	58	100	186	179	163	71	41	123	85	60
Total cattle slaughtered	161,662	192,418	190,350	156,186	147,295	154,723	161,465	171,103	181,075	188,889	186,444

As an example of the federal statistics, the condemnation rate for cattle slaughtered in Federal Plants for one month, October 2006, is given in Table 2.

Table 2. Cattle Slaughtered, Number Condemned Per 10,000 Head, and Ranking in Federal Slaughter Plants for October 2006

For October 2006	Atlantic Provs.	Que.	Ont.	Man.	Sask.	Alta.	BC	Canada	Canada Jan-Dec 2005
Total # cattle slaughtered (x 10,000)	25.48	132.26	31.08	113.86	78.19	21.19	38.67	35.07	31.00
# condemned for Neoplasm (Lymphosarcoma)	0.00	36.80	2.57	6.7	1.11	0.88	0.00	3.63	3.00
Ranking as condemnation cause in the animals slaughtered per province*		1st	3rd	5th	8th	8th		4th	4th

(Note that animals slaughtered in a particular province may not have originated in that province.)

In Ontario when cattle are condemned for Lymphosarcoma, the owner of the animal at the time bears the cost. Frequently, the owners of these animals at the time of slaughter are the abattoir operators who have purchased them from farms, feedlots, sales barns or dealers. Occasionally, conditions of purchase may be applied, in which case someone other than the abattoir operator may bear some or all of the loss. If the slaughter is a custom kill for an owner, and the animal fails to pass inspection, then the owner will not pay for cutting and wrapping (which was not done) but is still out of pocket for transportation costs, killing, processing, evisceration and dressing abattoir costs, and if applicable, disposal costs.

Botulism – Handling the Milk and Meat Withdrawal Issue in the UK

Ann Godkin, Animal Health and Welfare, OMAFRA

A recent report in the *Veterinary Record* highlighted the changes made in the Food Standards Agency regulations in the U.K. with regards to the withdrawal of milk and meat for sale from farms affected by clinical outbreaks of botulism.

As a result of the discussions of an advisory committee convened in the UK, milk and meat from cattle clinically affected by botulism continues to be considered a risk to humans and must be withheld from sale.

The farm can continue to market the milk of unaffected animals within the herd. Milk can be marketed from the farm, as scientific evidence to date found that milk and meat from apparently unaffected individuals poses no risk to humans, and there should be no restrictions on its sale.

The committee justified their advice by reviewing the literature and finding that few human cases of botulism have been associated with type C or D toxicosis (the toxin types most commonly found in animals); there was little evidence of human cases of botulism resulting from meat or milk; and there has been no clinical cases of botulism in suckling calves in affected herds.

Here in Ontario, when outbreaks of any disease (including Botulism) occur, milk and meat will always be withheld from sale, according to Dairy Farmers of Ontario's Precautionary Principle, to prevent undue risk to people. Dairy producers should contact their DFO field person immediately to ensure milk is withheld and to document conditions on the farm. DFO will continue milk payment when a 'withhold' is necessitated by disease problems.

These UK precautions may be justified when botulism is confirmed. Confirmation of botulism continues to be difficult. Early submission of samples to the Animal Health Labortory in Guelph from the first affected animals is the best way to establish a diagnosis and will be important in determining the fate of the meat or milk from farms affected by any disease outbreaks. Veterinary practitioners should advise producers of this need and show them how it could protect their payment and the market for their milk.

Changes to FSA advice on botulism in cattle. Veterinary Record 2006, Dec 9th, Page 822.

Neospora – Where to Get the Information on Transmission

A succinct and useful review on Neosporosis in dairy cattle has recently been published in the journal Theriogenology. Written by Dr. John Gay, a field investigator at the College of Veterinary Medicine at Washington State University, this review is a good update for veterinary practitioners. In particular Dr. Gay summarizes the known reservoirs and transmission cycles of this complex pathogen.

The reference is;

Gay J. Neosporosis in dairy cattle – An update from an epidemiological perspective. Theriogenology 2006; 66:629-632.

Standards for Organic Farming

Ann Godkin, Animal Health and Welfare, OMAFRA

A National Standard of Canada is a standard that has been approved by the Standards Council of Canada and one which reflects reasonable agreement among the views of a number of capable individuals whose collective interests provide, to the greatest practicable extent, a balance of representation of producers, users, consumers and others with relevant interests. The standards produced are voluntary and are produced by the committee using the consensus process.

Last fall the Standards Council approved standards for organic farming. These may be of interest to veterinarians working with organic livestock producers. Titles of these documents and their website addresses are listed below.

As is the case for all products sold in Canada, organic inputs and products derived from organic agriculture should comply with all applicable regulatory requirements.

Organic Production Systems – General Principles and Management Standards
www.dairyinfo.gc.ca/pdf/032_0310_2006-e.pdf

Organic Production Systems – Permitted Substance Lists
http://download.www.techstreet.com/cgi-bin/pdf/free/467507/032_0311_2006-e.pdf

Corn Silage Supplementation Before Alfalfa Grazing Prevents Bloat

Ann Godkin, Animal Health and Welfare, OMAFRA

The following abstract may present some timely information as we head into grazing season.

Abstract

Changes in the ruminal environment of cattle supplemented with corn silage (CS) before alfalfa grazing, in relation to the occurrence of frothy bloat, were evaluated. Six ruminally fistulated heifers were used in a crossover design experiment for in situ determinations and as a source of rumen fluid for in vitro measurements. Alfalfa pasture was grazed at the vegetative stage in a rotational grazing system. Treatments were — C: no supplement; CS: 0.5 kg of CS dry matter/100 kg body weight. CS supplementation reduced ($P<0.05$) the frequency and severity of frothy bloat. From the sixth hour until the end of the incubation at 12 h, in vitro microbial gas production using alfalfa leaflets as substrate was lower in rumen fluids from CS supplemented heifers. Bacterial mass in the liquid phase of ruminal contents, and in situ microbial colonization of particles entering the rumen did not differ. Only at 4 h post-grazing was proteolysis reduced ($P<0.05$) for both treatments. The anti-bloat mechanisms of CS were not completely identified, however we confirmed that CS supplementation before alfalfa grazing is a reliable management practice to reduce frothy bloat.

Bretschneider G, Peralta M, Santini FJ, Fay JP, Faverin C. Influence of corn silage supplementation before alfalfa grazing on ruminal environment in relation to the occurrence of frothy bloat in cattle. Animal Feed Science and Technology 2007; 136, (1-2 (July 15)):23-37.

Chronic Wasting Disease of Cervids

Bob Wright, Animal Health and Welfare and
Brian Tapscott, Agriculture Development, OMAFRA

Figure 1. Elk with Chronic Wasting Disease

Over the past five years, Chronic Wasting Disease (CWD) has emerged as the most important disease to impact on both wild and farmed cervid populations in North America. Since 2000, most jurisdictions in North America have developed surveillance programs to determine the presence or absence of CWD in both their farmed cervid and wild deer populations. In North America, more than 300,000 cervids have been tested for CWD in the past five years. Concerns over CWD transmission will affect the movement of live cervids and their products until better technology provides a live test with a high degree of sensitivity and specificity.

OMAFRA is currently conducting a voluntary surveillance project for CWD in farmed cervids. The project will pay for CWD laboratory testing and also offers producers a $45/sample sampling allowance to increase submissions. The objective of the project is to collect samples from all on-farm deaths greater than 12 months of age and slaughter animals. The project will cover up to 30% of the mature animals in the herd. For complete project guidelines, refer to the *Health Management* section of the OMAFRA website.
www.omafra.gov.on.ca/english/livestock/alternat/deerelk.htm

CWD Sample Collection and Testing

The obex section of the brain stem (medulla oblongata) is the preferred tissue in elk and red deer. It is collected through the foramen magnum. The retropharyngeal lymph nodes (RPLN) are the preferred tissue for testing in white-tailed and mule deer.

From all on-farm deaths, practitioners should collect and submit both the obex and RPLN. These tissues are submitted **fresh or fresh/frozen** to the Animal Health Laboratory, University of Guelph.

For slaughter animals, producers should contact Brian Tapscott or Bob Wright (OMAFRA) two weeks prior to the processing date to make arrangements for sample collection and testing. OMAFRA staff will collect the sample. The carcass will be held at the abattoir until the sample is found to be CWD negative. The 2-week notice allows for coordination of sample collection and testing and usually results in a 36-hour, turn-around time from when samples arrive at the laboratory until results and the carcass are released.

The cervid industry is awaiting development of a live test. Biopsy and testing of tonsillar material has been tried but is not very practical. Canadian researchers are currently evaluating the use of rectal mucosa as a live cervid test. Researchers at the University of Guelph have been experimenting with an acoustic sensor for prion detection in blood and urine.

Practitioners who need;

- refreshing on sample collection procedure
- information on the Ontario surveillance project, or
- information on the Canadian CWD Voluntary Herd Certification Program,

should contact:

Bob Wright, Lead Veterinarian, Disease Prevention - Equine and Alternate Species
Tel.: (519) 846-3412, Fax: (519) 846-8101, E-mail: robert.wright@ontario.ca

Brian Tapscott, Alternative Livestock Specialist
Tel.: (519) 846-3400, Fax: (519) 846-8178, E-mail: brian.tapscott@ontario.ca

To Veterinary Practitioners Working with the Bovine Species

Canadian Food Inspection Agency

As you know, Bovine Spongiform Encephalopathy (BSE, commonly known as mad cow disease), is spread when cattle consume feed products contaminated with proteins from infected animals. The agent associated with BSE concentrates in certain tissues known as specified risk material (SRM). These include the skull, brain, trigeminal ganglia, eyes, tonsils, spinal cord, and dorsal root ganglia of cattle aged 30 months or older, and the distal ileum of cattle of all ages.

Canada's recent official recognition by the World Organization for Animal Health (the OIE) as a **Controlled BSE Risk country** recognizes the effectiveness of our surveillance and eradication procedures. This has been the result of a collective effort by all levels of government, the cattle industry, ranchers and veterinarians. The recently announced enhanced feed ban continues this collective effort to maintain and improve upon this status.

To this end, enhanced animal health safeguards will come into effect on July 12, 2007. Specifically, SRM is banned from all animal feeds, pet foods and fertilizers. Particular requirements apply to anyone handling deadstock containing SRM, including veterinarians who work with cattle. Examples of this include: a bovine mortality that is to be transferred to a veterinary clinic for post mortem or a bovine mortality in a veterinary clinic that will be moved for disposal.

A permit will be required for anyone to remove, use, convey, treat, store, sell, distribute, confine or destroy SRM. Therefore veterinarians will require a permit for various activities, such as, receiving a bovine carcass. Included with the issuance of a permit will be requirements regarding dying of the carcass, marking of the conveyance, relevant cleaning and disinfection procedures and record keeping requirements.

For further information about SRM handling requirements or the permit application process, please contact your nearest CFIA office.

Continuing Education/Coming Events - 2007

June 20 - 21	Ontario Pork Congress, Stratford Fairgrounds, Stratford, Ontario. www.porkcongress.on.ca/
June 21	Organic Dairy Veterinary Care at Vermont Veterinary Medical Association's Summer Meeting, Wyndham Hotel, Burlington, Vermont. Contact Kathy Finnie, VVMA Executive Director, (802) 878-6888, kathy@vtvets.org. www.vtvets.org/about/continuing_education.shtml
June 21 - 22	National Compost Dairy Barn Conference, Holiday Inn-Burnsville, Burnsville, Minnesota. www.ansci.umn.edu/compostbarnconf.htm
June 22 - 24	Equine Dentistry: Current Concepts and Fundamentals, University of Minnesota. 1-800-380-8636, e-mail: vop@umn.edu
June 25 - 27	2007 Annual Conference on Antimicrobial Resistance, Hyatt Regency, Bethesda, Maryland. www.nfid.org/conferences/resistance07/
July 8 - 12	American Dairy Science Association, Poultry Science Association, Asociación Mexicana de Producción Animal, and the American Society of Animal Science Joint Annual Meeting, San Antonio, Texas. www.adsa.psa.ampa.asas.org/2007
July 11 - 14	Canadian Veterinary Medical Association Convention, Ottawa Congress Centre, Ottawa, Ontario. http://canadianveterinarians.net/professional-convention.aspx
July 14 - 18	144th American Veterinary Medical Association Annual Convention, Washington Convention Centre, Washington, D.C. www.avmaconvention.org
July 29 - 31	American Association of Equine Practitioners (AAEP) Continuing Education Meetings. Focus 2007: Focus on Lameness and Imaging in conjunction with the 15th Annual Practice Management Seminar, Fort Collins Marriott, Fort Collins, Colorado. AAEP office (859) 233-0147, e-mail: aaepoffice@aaep.org . www.aaep.org/continuing_edu.htm
Aug 12 - 15	6th International Conference on Boar Semen Preservation, Nottawasaga Conference Centre, Alliston, Ontario. www.aps.uoguelph.ca/boarsemen2007/
Aug. 16	George A. Young Swine Health and Management Conference, South Sioux City, Nebraska. georgeyoungswineconference.unl.edu/
Aug. 22 - 25	The Boundary Waters Veterinary Conference: Food Animal Production without Antibiotics, Vermilion Community College, Ely, Minnesota. bwcaw-vetconf.com/index.html
Sept. 15 - 18	Allen D. Leman Swine Conference, RiverCentre Conference Facility St. Paul, Minnesota. www.cvm.umn.edu/outreach/events/adl/
Sept. 20 - 21	National Animal Care & Welfare Conference, Travelodge Hotel and Conference Centre, 1376 Carling Avenue, Ottawa, Ontario. www.nfacc.ca/News-Item.aspx?id=5
Sept. 20 - 22	40th Annual Convention of the American Association of Bovine Practitioners The American Association of Small Ruminant Practitioners will meet jointly with AABP, Vancouver, British Columbia. www.aabp.org/meeting/default.asp
Dec. 1 - 5	American Association of Equine Practitioners 53rd Annual Convention, Gaylord Palms Resort and Convention Center, Orlando, Florida. www.aaep.org

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Deadline for next issue: August 31, 2007

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